

NOT ALL COLLAGENS ARE ALIKE!



Feed Your Skin and Joints*



BioCell Collagen® for Joint, Skin and Connective Tissue Health

Intrinsic aging produces many physiological changes that affect how the body looks and feels, which depends, at least in part, upon the structural integrity of the connective tissue. Connective tissue binds all of the organs and other tissues of the body. Aging gradually weakens the connective tissue by depleting components of the extracellular matrix (ECM), including collagen, glycosaminoglycans (GAGs), and proteoglycans by UV-initiated photo-damage and other lifestyle risk factors such as smoking or chronic exposure to environmental pollutants.

Many internal and external factors influence the pace and effects of aging. There is a link between the progression of aging and the steady deterioration of the ECM in connective tissue, which results from decreased synthesis and increased degradation of molecules essential for connective tissue integrity.

Since collagen and GAGs such as chondroitin sulfate (CS) and hyaluronic acid (HA) are the major molecular constituents of the ECM, their replenishment could help counteract various undesirable effects of aging. These effects include overall bodily weakness, vulnerability to injury, and visible facial changes.*

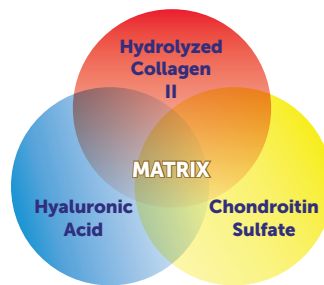
Nutraceuticals have been used for several decades to promote healthy aging. However, very few science-backed dietary supplements on the market address the physiological degradation of connective tissue and the associated age-related loss of their structurally essential molecules. Among these nutraceuticals is a patented healthy aging dietary supplement ingredient trademarked BioCell Collagen®, developed and distributed by BioCell Technology, LLC of Irvine, CA USA. Multiple human clinical trials, including safety, efficacy, and bioavailability studies, have demonstrated that oral ingestion of BioCell Collagen® promotes joint health and skin beauty.*

THE UNIQUE MOLECULAR NATURE OF BIOCELL COLLAGEN®

There are at least 28 different types of collagen found in the body. Much diversity exists between ingredients in the collagen space that can impact efficacy depending on many factors, including type, source, molecular composition, molecular weight, and manufacturing process. BioCell Collagen® is much more than isolated or purified collagen protein. BioCell Collagen® is a unique synergistic ingredient composed of naturally occurring hydrolyzed collagen type II peptides, chondroitin sulfate, and hyaluronic acid. Aristotle once said, "the whole is greater than the sum of its parts." BioCell Collagen® is not a blend of isolated collagen, chondroitin, and hyaluronic acid. The complex matrix of molecules found in the branded ingredient BioCell Collagen® is clinically proven. One cannot expect the same results from using isolated molecules or ingredient blends.*

BioCell Collagen® is derived exclusively from hormone and antibiotic-free chicken sternal cartilage, a rich source of type II collagen, hyaluronic acid, and chondroitin sulfate, which closely mirrors the composition of human articular cartilage. Cartilage is a clean and desirable source because it is free from the blood supply and devoid of lymphatics and nerves, unlike other parts of the carcasses of fish, cows, pigs, or chicken used to manufacture the majority of collagen ingredients on the market, including gelatin. Gelatin products may also be referred to as hydrolyzed collagen, collagen hydrolysate, gelatine hydrolysate, hydrolyzed gelatine, collagen type I, collagen type I & III, multi-collagen, and collagen peptides after it has undergone hydrolysis to enhance bioavailability. These products, including bone broth powders, typically contain high protein content (>90%) and are predominantly Type I collagen since it is the most abundant collagen in the body. The effective daily amounts

UNIQUE SYNERGISTIC INGREDIENT



of collagen peptides typically range from 2.5 to 15 g. On the other hand, Type II collagen is valuable due to the scarcity of its source and unique molecular composition. Type II collagen comes from cartilage, making up most of the protein content, and coexists with GAGs CS and HA. BioCell Collagen® has a clinically proven daily dosage of 1 to 2 g.*

The manufacturing of BioCell Collagen® uses strict procedures that subject the chicken sternal cartilage through various processes, including filtration, purification, concentration, hydrolysis, sterilization, and testing to ensure consistent quality before distribution. BioCell Collagen® is self-affirmed GRAS (Generally Recognized As Safe), is non-GMO, and free of gluten, soy, shellfish, fish, egg, milk, peanuts, and sugar. BioCell Collagen® is made in the USA and Germany.

THE SCIENTIFIC STUDIES OF BIOCELL COLLAGEN

The ingestion of BioCell Collagen® is thought to stimulate chondrocytes, which play a role in the renewal mechanism of cartilage, and stimulate fibroblasts for skin renewal, thus supporting all three major collagen types (I, II, and III). Moreover, BioCell Collagen® demonstrated concentration-dependent inhibition of hyaluronidase, the enzyme that degrades hyaluronic acid, contributing to signs of aging on the skin and loss of viscoelasticity of joint synovial fluid. BioCell Collagen® also attenuates deleterious changes in biomarkers including creatine kinase, lactate dehydrogenase, and C-reactive protein, adding further clues into its mechanism of action (Lopez et al., 2014).*

In a published randomized, double-blind, placebo-controlled clinical trial, 500 mg of BioCell Collagen®, taken twice daily, was found to reduce common signs of skin aging visibly. This included a measurable improvement in signs of aging in women, represented by increased skin elasticity, reduction of crow's feet, and improvement

in depth and number of fine lines and wrinkles within 12 weeks of daily use. The study evaluated the use of BioCell Collagen® among 128 women aged 39-59 (Schwartz et al. *Altern Ther Health Med. 2019 Sep;25(5):12-29.*). These results corroborated the results of an earlier study that found ingestion of BioCell Collagen® enhanced blood microcirculation and reduced facial aging signs. (Schwartz, Park J, 2012).*

In a randomized, double-blind, placebo-controlled human clinical trial, 80 subjects ingested two grams of BioCell Collagen® daily for ten weeks. The subjects experienced statistically significant improvement in their joint comfort and ability to engage in physical activities on days 35 and 70 (Schauss, Stenehjem, Park, Endres, Clewell, 2012). These results corroborated the results of another earlier double-blind placebo-controlled trial tested on sixteen people. (Kalman et al., 2004).*

In a pilot randomized, double-blind placebo-controlled study of BioCell Collagen® on healthy recreationally active subjects, participants ingested three grams of BioCell Collagen® daily over six weeks before an upper-body muscle-damaging resistance exercise challenge. Participants experienced favorable improvements in stress resilience and recovery after bouts of intense resistance exercise without any reported side effects (Lopez et al., 2014).*

A published laboratory study found that daily ingestion of BioCell Collagen® reduced common signs of UVB-induced photoaging compared to the group that did not receive the supplement. The study found that oral supplementation with BioCell Collagen®, with controlled UVB exposure, resulted in reduced signs of photoaging, including significant decreases in wrinkles and transepidermal water loss, and significant increases in skin elasticity and hyaluronic acid (HA) content. (Phipps et al., 2020).*

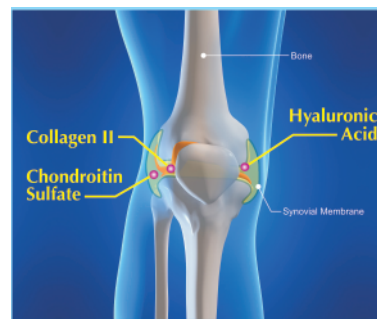
CLINICALLY VALIDATED STRUCTURE-FUNCTION CLAIMS

Dietary supplements that contain a daily dosage of 1 gram of BioCell Collagen® can substantiate:

- Reduces facial lines and wrinkles*
- Reduces crow's feet*
- Improves skin elasticity*
- Reduces skin dryness*
- Boosts skin collagen and hyaluronic acid*

Dietary supplements that contain a daily dosage of 2 grams of BioCell Collagen® can substantiate:

- Promotes joint comfort and mobility*
- Promotes cartilage health and stimulation*
- Promotes synovial fluid health*
- Boosts hyaluronic acid*



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